

What is claimed is:

1. A cellular communications system providing wireless communication with system users and having a wireless millimeter wave trunk line for communicating with a communication office, said system comprising:
  - A) a plurality of cellular base stations each of said base stations serving a communication cell, each of said base stations comprising:
    - 1) at least one low frequency wireless transceiver for communicating with users within said cell at a cell phone radio frequency lower than 3 GHz,
    - 2) at least one high frequency wireless transceiver for communicating with other base stations as a part of said trunk line at a trunk line frequency higher than 60 GHz, and
    - 3) a data transfer means for transferring data communicated through said at least one low frequency transceiver to said at least one high frequency wireless transceiver and for transferring data communicated through said at least one high frequency wireless transceiver to said at least one low frequency wireless transceiver, and
  - B) at least one high data rate communication link providing communication between said plurality of cellular base stations and said telephone communication office.
2. A cellular communication system as in claim 1 wherein each of said base station transceivers is configured to transmit to and receive from a second site through atmosphere digital information at rates in excess of 1 billion bits per second during normal weather said first transceiver comprising an antenna producing a beam having a half-power beam width of about 2 degrees or less.
3. A system as in claim 1 and further comprising a back-up transceiver system operating at a data transmittal rate of less than 155 million bits per second configured

to continue transmittal of information between said first and second sites in the event of abnormal weather conditions.

4. A system as in claim 3 wherein said backup transceiver system is a microwave system.

5. A system as in claim 1 wherein both said high frequency transceivers are equipped with antennas providing a gain of greater than 40 dB.

6. A system as in claim 1 wherein said high frequency wireless transceivers are capable of transmitting and receiving at rates in excess of 1 billion bits per second and the antennas of both systems are configured to produce beam having half-power beam widths of about 0.36 degrees or less.

7. A system as in claim 1 wherein a plurality of said high frequency wireless transceivers are configured to transmit at frequencies in the range of about 71-76 GHz.

8. A system as in claim 1 wherein a plurality of said high frequency transceivers are configured to transmit at frequencies in the range of about 81-86 GHz.